



Genotype x environment interaction for herbage accumulation rate of C₄ grasses under different water conditions

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The phenotype expression results from the effects of genotype, environment plus the genotypes x environment interaction. Studies about the genotypes x environments interactions contribute to improve knowledge about behavior of cultivars in different environments, so that they may be recommended for certain regions and growing conditions. The aim of this study was to evaluate the adaptability and the stability of production of *Urochloa brizantha* (cvs. Xaraés, Marandu e Piatã) and the interactions between genotypes and environments. The productivity of the cultivars, expressed as dry mass accumulation rate, was obtained under rainfed and irrigated conditions from April 2011 to March 2012 (six growing periods). Growing periods were split into cold/dry (April/October) and hot/rainy (November/March) seasons. We tested the hypothesis that there is an interaction between cultivars and environmental conditions along the growing periods for plants cultivated on both rainfed and irrigated conditions. The study was held at Embrapa Southeast Livestock, in São Carlos, SP. Data analysis was performed by Selegen program Mixed model methodology and the harmonic mean of the relative performance of genotypic values were used for simultaneous inference about the adaptability and stability method. During the hot/rainy season herbage accumulation rate was higher than in the cold/dry season, characterizing a seasonal dry mass production. The results indicated that there was no complex interaction between cultivars and environments. There was a simple correlation with genetic correlations across environments of 0.95 and 0.78 in rainfed and irrigated condition, respectively. Therefore, the same cultivar can be recommended for environments with no water restriction (irrigated condition) or seasonal water restriction (rainfed condition). Regardless the environment, *Urochloa brizantha* cv. Xaraés had the best performance, followed by cv. Piatã. In irrigated conditions, the cultivars presented higher phenotypic and genotypic values for dry mass accumulation rates.

Keywords: *rainfed conditions, irrigated condition, Xaraés, Piatã, Marandu*

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